

STATE OF GEORGIA

TIER 2 TMDL Implementation Plan (Revision # 01)

Segment Name: BROAD RIVER

(SR 281 to Scull Shoal Creek near Danielsville)

Date: June 15, 2007

River Basin: Savannah River Basin

Local Watershed Governments:

Madison, Elbert, Franklin and Hart Counties

Cities of Danielsville, Bowman, and Royston

I. INTRODUCTION

Total Maximum Daily Load (TMDL) Implementation Plans are platforms for evaluating and tracking water quality protection and restoration. These plans have been designed to accommodate continual updates and revisions as new conditions and information warrant. In addition, field verification of watershed characteristics and listing data has been built into the preparation of the plans. The overall goal of the plans is to define a set of actions that will help achieve water quality standards in the state of Georgia.

This implementation plan addresses the general characteristics of the watershed, the sources of pollution, stakeholders and public involvement, and education/outreach activities. In addition, the plan describes regulatory and voluntary practices/control actions (Best Management Practices, or BMPs) to reduce pollutants, milestone schedules to show development of the BMPs (*measurable milestones*), and a monitoring plan to determine BMP effectiveness.

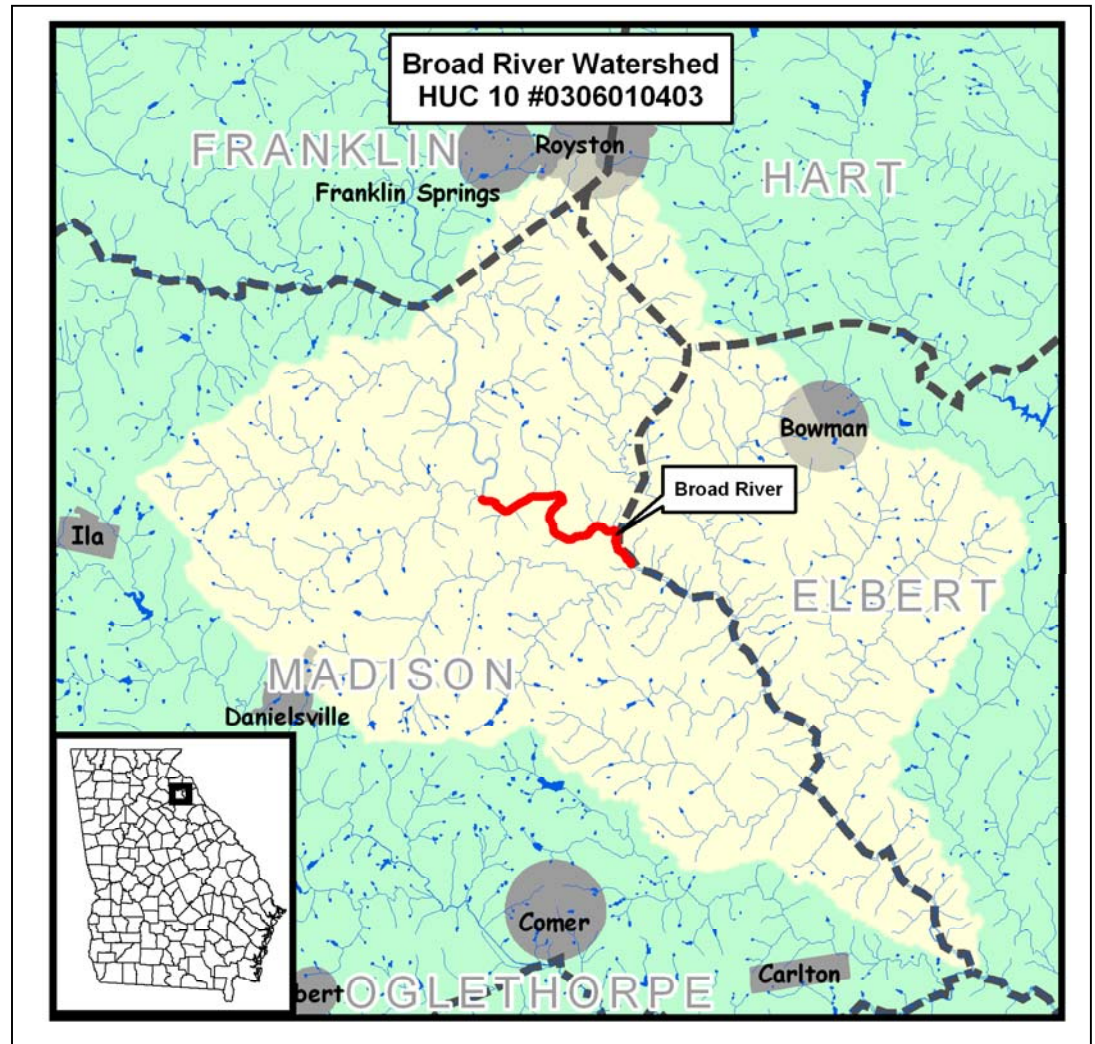


Table 1. IMPAIRED SEGMENTS IN THE HUC 10 WATERSHED

IMPAIRED SEGMENT	IMPAIRED SEGMENT LOCATION	EXTENT (mi/ac)	CRITERIA VIOLATED	EVALUATION
Broad River	SR 281 to Scull Shoal Creek near Danielsville	5 miles	Fecal Coliform	PS

II. GENERAL INFORMATION ABOUT THE HUC 10 AND THE SPECIFIC SEGMENT WATERSHEDS

Following is a review of watershed characteristics including its size and location, political jurisdictions, physical features, land uses, and identified potential sources of pollutants that could cause or contribute to violations of water quality standards addressed in this TMDL Implementation Plan. New conditions or changes in information contained in the previous TMDL Implementation Plan should be in are in **bold** and underlined.

The HUC 10 # 0306010403 encompasses parts of Madison, Elbert, Hart and Franklin Counties. The Cities of Danielsville, Bowman and Royston lie partially within the HUC 10 watershed. There is one TMDL stream segment within this HUC 10 watershed. A segment of the Broad River is listed as partially supporting its designated use of fishing due to a fecal coliform impairment. The HUC 10 watershed is 96,121 Acres.

2004 NEGRDC Land Use for Broad River TMDL Segment Watershed			The Broad River (SR 281 to Scull Shoal Creek near Danielsville) TMDL segment is 5 miles in length and is located in Madison County northwest of Danielsville. The TMDL document states that this reach is not supporting designated uses due to a fecal coliform impairment; however, the listing should actually be partially supporting. This error occurred due to a discrepancy in sampling station locations. The TMDL document suggests that the data that listed the SR 281 to Scull Shoal Creek segment were collected in 2002 at the Hwy 72 crossing near Carlton. This sampling station is several miles downstream of the segment. In fact, the data that listed this particular segment were collected in 1997-1998 and indicates that the segment is partially supporting designated uses rather than not supporting designated uses. No new data have been collected since 1997-1998, so the segment is still listed as partially supporting uses due to fecal coliform impairment. The watershed for the SR 281 to Scull Shoal Creek segment is 28,022 acres. Madison County is the only local government involved in the TMDL implementation planning process for this segment.
Land Use Category	Area (Acres)	% of total	
Residential	5171.426	18%	
Commercial	33.44821	0%	
Industrial	32.22258	0%	
Transportation/Communication/Utility	9.403759	0%	
Park/Recreation/Conservation	208.4465	1%	
Public/Institutional	109.0462	0%	
Crop Production	7979.564	28%	
Animal Production	1856.996	7%	
Forestry/Logging	12621.03	45%	
Total	28021.59	100%	

Primary land uses in the watershed are forestry/logging, crop production and residential according to NEGRDC 2004 land use data. Forestry/logging accounts for 45%. The primary source of fecal coliform on forestry land is wildlife. However, there are likely to be human sources as well (hunting camps). According to land use data, crop production accounts for 28% of land use. However, during the windshield survey animal production was observed much more often than crop production. It is possible that most of the land classified in the land use data as crop production is in fact used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. Stakeholders confirmed that there is very little crop production in the county. Animal Production in the watershed consists primarily of pasture for cattle and horses and poultry and egg production. Residential land accounts for 18% of the watershed. All of the residences in the watershed are served by individual septic systems.

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

The Madison County Comprehensive Plan was written in 2001. According to this plan, Madison County adopted a Soil Erosion and Sedimentation Control Ordinance that addresses non-point source pollution on newly developed lands, and Madison County adopted a Stormwater Ordinance to address post-development stormwater runoff. The River Corridor Protection Ordinance was adopted in 1993. Madison County also has an ordinance allowing for the construction of conservation subdivisions that require at least 50% of the land to be kept as greenspace and be put into a permanent conservation easement. The remaining land will be developed with the same number of residences that would be allowed on the entire property under standard zoning regulations. Madison County has adopted a Groundwater Recharge Protection Ordinance.

In the future, Madison County will be adopting an ordinance to increase the riparian buffer limit on state waters from 25ft. to 50ft. and the South Fork Broad River may be added to the River Corridor Protection Ordinance.

Keep Madison Beautiful led the 2005 and 2006 Rivers Alive Cleanups on the Broad River in Oglethorpe, Madison, and Elbert Counties. The Broad River Watershed Association is active in Broad River watershed in Madison County and has been conducting a water quality study on streams in the Broad River watershed. Madison County is in the Oconee River RC&D region. The Oconee River RC&D has led EPA 319(h) funded programs in other counties in the region, but these have not been active in the South Fork Broad River watershed.

III. CAUSES AND SOURCES OF SEGMENT IMPAIRMENT(S) LISTED IN TMDLs

Table 2 provides information contained in the current TMDL for the impaired water body. This includes the name and location of the impaired segment, the water quality criteria violated, and the waste load and load allocations determined in the TMDL. Potential sources described in the TMDL may include domestic treatment facilities (M), industrial treatment facilities (I), urban runoff and sources (UR), and other nonpoint or unknown (NP) sources. By definition, "waste load allocations" (WLA) are established for municipal and industrial treatment facilities and storm water discharges in permitted areas (WLA_{sw}), while "load allocations" (LA) are established for nonpoint sources. **Waste load allocations are assigned by EPD during the NPDES permitting process. They are not part of EPD's TMDL implementation planning process, which deals solely with non-point sources of pollutants.**

Table 2. WASTE LOAD AND LOAD ALLOCATIONS AND TMDLS FOR THE IMPAIRED SEGMENT

STREAM SEGMENT NAME	LOCATION	CRITERIA VIOLATED	WLA	WLA _{sw}	LA	TMDL
Broad River	SR 281 to Scull Shoal Creek near Danielsville	Fecal Coliform			3.12E+15 counts/30days	3.46E+15 counts/30days

Table 3 also contains information presented in the TMDLs that this plan is designed to address. This includes the criteria responsible for the impairment(s), the specific water quality standard(s) violated, potential sources/causes of impairment, and the needed reduction in nonpoint source loads estimated in the TMDL.

Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs

CRITERIA VIOLATED : FC	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Fecal Coliform Bacteria (FC)	1,000 per 100 ml (geometric mean Nov-April) 200 per 100 ml (geometric mean May-Oct)	NP	69

IV. IDENTIFICATION AND RANKING OF POTENTIAL SOURCES OF IMPAIRMENT

This section identifies and describes, in order of importance, the extent and relative contributions from sources of pollutants listed in Table 2 and identified through this TMDL implementation planning process. This description includes information presented in the current TMDL or TMDL implementation plan and/or collected during the TMDL implementation planning process that either verifies or alters estimates of contributions from the sources listed in the TMDL and repeated in Table 2.

Sources in the Broad River TMDL segment watershed were identified by conducting visual field surveys of the stream crossings and the watershed land use. Prior to the visual field surveys, point data from the Georgia Environmental Protection Division were compiled and analyzed to determine the location of any point sources of pollution in the watershed. This data included the location of NPDES permitted facilities, landfills, LAS and CAFOs. In addition, 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of fecal coliform pollution within the watershed. 2004 RDC land use data were also consulted to determine the extent of potential sources of fecal coliform. One purpose of the TMDL implementation plan is to compare the most recent RDC land use data with the 1995 land use data that was used in the development of the TMDLs. However, in the case of the Broad River (Madison) segment, a different watershed delineation was used in the field survey, so comparison was not possible.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. Sources investigated during the windshield survey were primarily animal production facilities, because these are easy to identify from aerials and it can be readily apparent if they are not using certain Best Management Practices, such as animal exclusion from streams. These facilities were considered to be priority sources if animals had access to the stream or there were not best management practices in place to prevent runoff of fecal matter into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

The field surveys were presented to stakeholders at a TMDL implementation meeting. Any comments that were made in the meeting were included in the visual field survey report, which can be found in Appendix C of this document. The field surveys were posted on the NEGRDC website TMDL page.

Point Sources

There are no known point sources in the Broad River TMDL segment watershed.

Non-Point Sources

Wildlife

45% of the watershed land use is forestry/logging. Almost all of the land in close proximity to the TMDL segment is forestry land. In forested areas it is likely that wildlife is the primary source of fecal coliform; however, there may be human sources as well (hunting camps). A 2005-2006 update to the Georgia DNR Wildlife Resources Division's 2005-2014 Deer Management Plan calculates the actual, average deer population for Elbert,

Madison, and Oglethorpe Counties (Deer Management Unit 5) to be 34.1 deer/forested square mile. That would equate to 672 deer in the watershed. Forested designates all areas that are not residential, commercial or industrial, cropland or open pastureland. Projected optimum deer density (number of deer that the habitat can support in full health) for DMU 5 remains at 35 deer/square mile. Contributions from deer to coliform bacteria loadings in water bodies are considered less significant than contributions made from water fowl, raccoons and beavers.

Animal Production

Animal Production accounts for 7% of the watershed land use according to NEGRDC land use data. However, during the windshield survey animal production was observed to be quite common. Most of the land that is classified as crop production is probably used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. There were several farms with livestock in close proximity to the TMDL segment. A couple of the farms visited during the stream survey were adjacent to the TMDL segment and may not have animal exclusion fencing. 2006 estimated livestock populations for Madison County are as follows: 18,200 beef cattle, 525 dairy cattle, 1,700 goats, 1,475 horses, 100 hogs, 500 sheep, 592,000 chickens (layer), 15,155,200 chickens (broilers), and 360,000 chickens (breeders).

Failing Septic Systems

Residential accounts for 18% of watershed land use. It is likely that there are failing septic systems in the watershed, because there is no ordinance requiring maintenance. There is a requirement for permitting of septic systems upon installment. In Madison County there were 7,647 septic systems in 1990 and 9,724 septic systems in 2002. 386 systems were repaired from 1990-2002. It is estimated that there are about 1,060 residential parcels with septic systems in the watershed. About 170 of these parcels are adjacent to a stream in the watershed, but all houses next to the TMDL segment are separated from it by a buffer.

Table 4 ranks potential sources of water quality impairments in order of importance as determined through this TMDL implementation planning process. A “rating scale” of 0.5 to 5 has been developed for this activity. “Rating A” is an estimate of the geographic extent of each potential nonpoint source as a percentage of the contributing watershed area, percent of stream miles affected, or number of acres. “Rating B” is an estimate of the relative contribution from each major source of the pollutant causing the impairment. The overall relative “Impact Ratings” for each source is calculated by multiplying Rating A by Rating B.

The following table provides guidance for rating the estimated extent (Rating A) and portion of the contribution (Rating B) from each potential source and cause.

Rating A: Estimated Geographic Extent of the Source or Cause in the Contributing Watershed	Rating B: Estimated Portion of Contribution from the Source to the Pollutant Load Causing the Impairment	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	0.5
Scattered or low (approximately 5-20%)	Scattered or low (approximately 5-20%)	1
Medium (approximately 20-50%)	Medium (approximately 20-50%)	3
Widespread or high (approximately 50% or more)	Widespread or high (approximately 50% or more)	5
Unknown	Unknown	UNK

Comments on the source of information used to determine the extent or contribution are entered in the applicable columns in Table 4. Appropriate management actions (i.e. watershed assessments, increased water quality monitoring, etc.) are suggested where available information is deemed inadequate to estimate the extent and relative contribution of significant potential sources.

Table 4. EVALUATION OF POTENTIAL SOURCES OF STREAM SEGMENT IMPAIRMENT

CRITERION 1: Fecal Coliform

POTENTIAL SOURCES	ESTIMATED EXTENT OF CONTRIBUTION		ESTIMATED PORTION OF CONTRIBUTION		IMPACT RATING (A X B)
	Comments	Rating (A)	Comments	Rating (B)	
Wildlife	Forestry/logging is 45% of watershed land use	3	Forestry/logging adjacent to stream segment	3	9
Animal Production	Animal production is 7% of watershed according to land use data, but likely to be a lot more	3	Animal production in close proximity to tributaries but not TMDL segment	1	3
Failing Septic Systems	Residential is 18% land use	1	Several residential parcels adjacent to TMDL segment	1	1

Illegal Dumping		UNK		UNK	UNK
-----------------	--	-----	--	-----	-----

V. STAKEHOLDERS

Public involvement through the stakeholder process is a vital component of TMDL implementation planning. Stakeholders with local knowledge can provide valuable information regarding their communities, impaired waters, potential sources of impairments, and BMPs that might be employed to improve water quality. This section describes outreach activities engaging local stakeholders in the TMDL implementation plan preparation process, including the number of attendees, meeting dates, and major findings, recommendations, and approvals.

Stakeholder were involved in the TMDL implementation planning process through public meetings about TMDLs and TMDL implementation, through invitation to participate in visual field surveys, through county meetings to draft the plans, through one-on-one meetings, and through correspondence via e-mail and telephone.

Stakeholder Identification

Stakeholders were identified by compiling lists of stakeholders who participated in previous implementation activities and by reviewing TMDL implementation plans written by other RDCs to determine which organizations they brought to the table. Others were identified by word of mouth.

Press releases were sent out to local newspapers announcing public meetings, and memorandums were sent to previously identified key stakeholders. The Press releases and memos suggested that stakeholders invite others who are interested in water quality to the meetings as well. At the meetings it was made known that the stakeholder advisor group is ever expanding and that anyone with a vested interest in water quality should be added.

Elbert/Madison/Oglethorpe Counties Public Meetings

November 13, 2006 (14 attendees)

- Viewed video entitled "Watershed Wisdom: Georgia's TMDL Program"
- PowerPoint presentation entitles "Introduction to TMDL Implementation " was presented by RDC

March 6, 2007 (11 attendees)

- Presented visual field surveys
- Presented case studies of BMP implementation and 319 (h) projects used for TMDL implementation

Stakeholder Comments/Questions

- Concerns were raised about the accuracy of the RDC land use layer on the maps

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

- GIS staff found more updated land use layers, but they are from 2004 so any changes since 2004 will not be included
- Land use layers are parcel based. Parcel land use is determined by aerial photos and tax data from the internet. Some parcels may be labeled inaccurately
- Concerns were raised that the listing of water bodies is based on very limited sampling
 - Mary Gazaway of EPD responded that as of 2002, 4 samples must be collected within a 30-day period and the geometric mean of those samples has to exceed the limit for the stream to be listed. EPD recommends that sampling be conducted quarterly.
- Dudley Hartel mentioned that Madison County has a Adopt-a-Stream Program
- Ruth Ann Tesanovich said Madison County is in the process of revising its comprehensive land use plan. As part of the proposed revision the riparian buffers would be increased to 50ft. Property Owners for Commonsense Growth recommended it be increased to 75ft.
 - The revision was passed with riparian buffer requirements being increased to 50ft.
- Can volunteers submit water quality data for listing/delisting decisions?
 - Yes, but they must have an EPD approved Sampling Quality Assurance Plan and the samples must be analyzed in an EPD certified lab
 - UGA (Engineering or Ecology) has an EPD certified lab that volunteers can use (ask Mark Risse)
 - Municipal Wastewater Treatment Facilities have EPD certified labs
- The suggestion was made that future meetings be conducted during the day so there will be more participation
- Another suggestion was to meet with each county separately at the county seat

Madison County Advisory Group Meeting
April 25th, 2007
(3 Attendees)

- Presented source ratings for Broad River (Madison), South Fork Broad River (Madison), South Fork Broad River (Madison/Oglethorpe) and South Creek/Biger Creek.
- Presented current funding options, current water quality ordinances and management measures, and new recommended management measures.
- Revised plans based on stakeholder comment/suggestion

Stakeholder Comments/suggestions

- Discharge from Danielsville system is likely to be a source. System does not treat effluent well. *(Does not apply to this watershed)*
- Stakeholders verified that crop production is not a source of fecal coliform, and crop production probably only 1 or 2% of watershed land use.
- Code enforcement officer enforces septic repair and illegal dumping. He says septic not likely to be a major source, because repairs are enforced.
- County extension agent runs articles in newspaper, but only when the newspaper has space.
- Stakeholders say that a septic maintenance ordinance will probably not be adopted.

Following is a list of advisory committee or watershed group members who participated in this TMDL implementation planning process.

Table 5. STAKEHOLDER ADVISORY GROUP MEMBERS

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doug Appler, Madison County Planning	P.O. Box 68	Danielsville	GA	30633	706-795-6340	dappler@madisonco.us
Jack Huff, Madison County Code Enforcer	P.O. Box 510	Danielsville	GA	30633	706-795-5685	mcce@madisonco.us
Carl Varnadoe, Madison County Extension Director	P.O. Box 510	Danielsville	GA	30633	706-795-2281	Uge1191@uga.edu
Ruth Ann Tesanovich, Property Owners for Commonsense Growth	959 Hwy. 172	Colbert	GA	30628	706-788-3238	rtesanovich@uha.uga.edu
Burton 'Chip' Chandler, Watson Mill Bridge State Park	740 First St.	Carlton	GA	30627	706-797-3501	dewchndlr@aol.com
Marvin White, Madison County Chamber of Commerce	P.O. Box 361	Danielsville	GA	30633-5961	706-795-3473	marvin@madisoncountyga.org
Steve Sorrells, City of Comer Clerk	P.O. Box 65	Comer	GA	30629-0065	706-783-4552	shsorrells@alltel.net
Sam Linhart, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-783-2308	jeansmithga@earthlink.net
Victor Johnson, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-795-2184	glfvjy@charterinternet.com
Dudley Hartel, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-559-4236	drhartek@alltel.net

Major stakeholders in the watershed are listed in Appendix A.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Table 6A identifies significant BMPs that either have been or may be taken in the future to address sources of impairment. The BMPs are in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (A) installed and active; (AE) active and will be enhanced or expanded; (R) required by law, regulation or permit conditions; (P) currently proposed, but not required; (NR) new recommendation; or (NE) enhanced existing recommendation. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP has or will be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

Table 6A. MANAGEMENT MEASURES AND ACTIVITIES

GENERAL AND SPECIFIC MEASURES APPLICABLE TO CRITERION 1: Fecal Coliform

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Federal Clean Water Act, Section 305(b) and 303(d)	USEPA, Georgia DNR/EPD, Local/County Government	The congressional objective of the CWA “is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Section 305 (the <i>National Water Quality Inventory</i>) requires states to report progress in restoring impaired waters to EPA on a biennial basis. Section 303(d) requires states to identify ‘impaired’ waters, submit a list to EPA every two years, and develop TMDLs for these waters.	Federal, State	A	In place, On-going		
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6	Law prohibiting discharge of excessive pollutants (sediments, nutrients, pesticides, animal wastes, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream	Federal, State, Local/County Governments	A	In place, on-going		

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

		habitats. Law authorizing Georgia EPD to control water pollution, eliminate phosphate detergents and regulate sludge disposal; to require permits for agricultural ground and surface water withdrawals; to prohibit siltation of state waters by land disturbing activities and require undisturbed buffers along state waters; to require land-use plans that include controls to protect drinking water supply sources and wetlands; to require river basin management plans on a rotation schedule for all major river basins.					
Georgia Planning Act, Part 5	NEGRDC, Madison County	Coordinated Planning Program, managed by Georgia DCA requires local governments to identify Developments of Regional Impact (DRI) and develop plans to protect and manage Regional Impact Resources (RIR).	Local/County Governments Impact Fees	A	In place, on-going		Effectiveness varies with the specific BMPs applied.
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Georgia DHR, County Board of Health	Rules and regulations for installation and repair of on-site sewage management systems.	State, County Board of Health	A	In place, on-going	5	3 (in new development)
Georgia Planning Act, Part 5 - River Corridor Protection Ordinance	Madison County	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans. Requires 100 ft. Vegetated buffer on the Broad River and Hudson River. South Fork Broad River should be added in May 2007. Single-family residential housing allowed in buffer if on 2 acre lot and septic drainfield is not installed in buffer. Doesn't apply to existing land use.		NE	1993, enhanced May 2007	1	3 (for new development)
Soil Erosion and Sedimentation Control Ordinance	Madison County	Currently requires 25ft. buffer on state waters for new and redevelopment. Single-family residential housing allowed in buffer if on 2 acre lot and septic drainfield is not installed in buffer. This will be changed to 50ft. in May 2007.		NE	May 2007	5	1 (for new and redevelopment)
Georgia Planning Act, Part 5 - Groundwater	Madison County	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning		A	2006	.5	1

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

Recharge Ordinance		Criteria (set by Georgia DNR) to include in local long-term comprehensive plans.					
Post-Development Stormwater Ordinance	Madison County	Stormwater ordinance complies with NPDES Phase II, which wouldn't have been required until after 2010. Requires post development storm water BMPs for land disturbing activities that create 5,000 square feet of impervious surface or that involve land development of 1 acre or more.	Madison County	A	2006	1	Varies with BMP applied.
Conservation Subdivision Ordinance	Madison County	Requires at least 50% of the land to be kept as greenspace and be put into a permanent conservation easement. The remaining land will be developed with the same number of residences that would be allowed on the entire property under standard zoning regulations.		A	2001	.5	1 (for new and redevelopment)
Set aside funds for purchase of greenspace	Madison County		Georgia Land Conservation Program, Madison County	A		UNK	1
Development Standards Program	Madison County	Creates point system for approval of development. Must have 200 points for approval. Different development practices worth different number of points. Some practices involve increasing or maintaining tree cover and greenspace.		A		5	1 (for new or redevelopment)
Rivers Alive	Keep Madison Beautiful	Annual river cleanup. Keep Madison Beautiful leads volunteer effort on Broad River in Elbert, Madison and Oglethorpe Counties.		A	Ongoing	.5	.5
Illegal Dumping Programs	Madison County	Develop ordinance forbidding illegal dumping of waste, place no dumping signs, and allow for citizen reporting of illegal dumping.		A	In place, on-going	UNK	UNK
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Informs those involved in the agricultural business of effective practices to minimize non-point source pollution.	State	A	In place, on-going		Varies with BMP applied.
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal	Georgia Department of Agriculture	This requires that persons engaged in removing animal manure from livestock/poultry production areas, transporting animal manure on public roadways, or depositing animal manure to a premise other than its point of origin obtain	State	R	In place, on-going		Effectiveness will vary with the specific application.

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

Industry Division		a permit and follow rules to control animal disease, and outlines regulations for transportation, equipment and storage.					
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Voluntary program that provides technical and cost share assistance for protection of ground and surface water, erosion control, air quality, wildlife habitat, and plant health.	Federal (Farm Bill 2002) 50% cost share with possible additional incentive payments	A	In place, on-going		Varies with BMP applied.
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency	Provides technical assistance, rental payments and cost share funding to address specific natural resource concerns including: protection of ground and surface waters, soil erosion and wildlife habitat. Eligible practices include tree planting, grassed waterways, wildlife habitat buffers, and shallow water area for wildlife and filter strips.	Federal Annual rental payment for land taken out of production and 50% cost share for practice installation.	A	In place, on-going		Effectiveness will vary with the specific application.
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	Natural Resources Conservation Services	This is the first program that rewards farmers and ranchers for high levels of environmental stewardship. Producers on cropland, orchards, vineyards, pasture and range may apply for CSP regardless of size, type of operation, or crops produced. Land in other cost share programs is not eligible. CSP will first be offered in watersheds with greatest potential for improving water quality, soil quality and grazing land condition. In 2005, the four watersheds of focus will be the Ichawaynochaway, Kinchagoonee-Muckalee, Middle Flint, and Upper Ochlockonee. An enhancement example is to install a riparian buffer,	Federal (Farm Bill 2002) Cost Share. There are three tiers of involvement, which result in different expectations and cost share opportunities.	P	2007		Varies with BMP applied.
Water Quality newspaper articles	County Extension	Extension agent has a column in the local paper. Periodically runs water quality articles related to agricultural BMPs, septic maintenance, etc.		A		.5	3
Targeted Sampling Volunteer Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling for E. coli using 3M petrifilm to determine priority sources of fecal coliform. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of E. coli and help prioritize use of	Section 106 Grant for TMDL Implementation	NE	2008	5	3

		funding and resources.					
--	--	------------------------	--	--	--	--	--

Work Sheet for Table 6B is designed to evaluate the capacity of existing, proposed, or pending BMPs to achieve nonpoint source load reductions specified in the TMDL as well as other BMPs that might be implemented to further reduce pollutant loadings from significant sources. This approach is intended to provide a usable local guide to adopt BMPs for achieving water quality goals, establishing priorities for grant or loan programs, and identifying priorities for local watershed assessments and protection plans.

Columns 1 and 2 contain significant potential sources and their corresponding impact ratings (from Table 4). Column 3 lists significant BMPs applicable to each significant source (from Table 6A). Column 4 is a very brief “evaluation summary”, developed in conjunction with local stakeholders, of whether existing or proposed BMPs will achieve load reductions identified in the TMDL. Column 5 contains a summary of additional information needed to further determine significant sources and their relative contributions, and could contain recommendations for water quality monitoring, watershed assessments, or additional data acquisition. If current or proposed management measures are judged inadequate to achieve the load reductions for significant sources identified in the TMDL, additional management measures that could effectively reduce pollutant loads should be listed in “Additional Information / Measures Needed” (Column 5) and included as new enhanced existing recommendations (NE) or new recommendations (NR) under “Status Code (5)” in Table 6B and under “Milestones” (Table 9).

**Work Sheet for Table 6B: EVALUATION OF GENERAL AND SPECIFIC MANAGEMENT MEASURES AND ACTIVITIES
APPLICABLE TO EACH CRITERION**

APPLICABLE TO CRITERION 1: Fecal Coliform.

SIGNIFICANT POTENTIAL SOURCES (1) (From Table 4)	IMPACT RATING (2) (From Table 4)	APPLICABLE BMPs (3) (From Table 6A)	EVALUATION SUMMARY (4)	ADDITIONAL INFORMATION / MEASURES NEEDED (5)
Animal Production	3	Georgia Best Management Practices	Current management practices do not target farms that are in close proximity to the TMDL segment or those that are shown to have a direct impact on water quality.	Successful implementation of programs requires technical, assistance, education and marketing
		Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division		If loads from animal production are not being reduced, consider improving marketing to farms close to TMDL segment.
		Environmental Quality Incentives Program (EQIP)		
		Conservation Reserve Program (CRP)		
		Conservation Security Program (CSP) (available for Broad River Watershed in 2007)		

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

Failing Septic Systems	1	Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Effective enforcement of septic installation and permitting requirements will minimize future failures Implementing and enforcing water quality related ordinances that restrict use of impervious surfaces, installation of septic systems and increasing the riparian buffer width requirement within environmentally sensitive areas will reduce the amount of polluted runoff being input into streams	If loads from septic systems are not being reduced, consider implementing a septic maintenance education program 319 (h) funds can be used to implement a septic repair initiative in the watershed to reduce inputs from failing septic systems
		River Corridor Protection Ordinance		
		Soil Erosion and Sedimentation Control Ordinance		
		Wetlands Protection Ordinance		
		Groundwater Recharge Ordinance		
		Well-Head Protection Program		
Wildlife	9	None	There is no reasonable assessment of the contributions of animal wastes from wild animals in wooded areas, waterfowl, or wild or domestic animals in or near stream corridors in urban or suburban areas. Management of wild animal wastes in wooded areas and urban stream corridors may not be feasible, but there are several management practices that may be applied to control waterfowl and domestic animal wastes.	Conduct a study to determine whether contributions of fecal coliform bacteria come from exclusively non-human sources (BST monitoring) or “natural conditions”. Should the study show that contributions from non-human sources occasionally exceed 200/100ml (geometric mean), submit data to EPD requesting a change in the fecal coliform standard to levels compliant with “natural conditions” for the segment.
				Should waterfowl be a significant contributor, consider measures to discourage waterfowl occupancy or manage populations.
Illegal Dumping	UNK	Illegal Dumping Programs	Effective enforcement minimizes the impact of illegal dumping on water quality impairment.	Encouragement of citizen reporting recommended.

Table 6B identifies new enhancements to existing measures (NE) or new recommended measures (NR) that could improve or supplement current or proposed management measures listed in Table 6A, where current and required measures have been judged inadequate for achieving the load reductions from significant sources identified in the TMDL. After further evaluation generated in the Work Sheet for Table 6B, the additional management measures proposed in Table 6B have been determined more effective in reducing pollutant loads from the most likely sources of impairment. The BMPs are listed in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (NE) enhanced existing measure or (NR) new recommended measure. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP could be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

**Table 6B. RECOMMENDED ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES TO ACHIEVE LOAD REDUCTIONS
(COMPILED FROM TABLE 6A AND COLUMN 5 IN WORK SHEET FOR TABLE 6B)**

APPLICABLE TO CRITERION 1: Fecal Coliform.

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Targeted Sampling Volunteer Monitoring Event “River Rendezvous”	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling for E. coli using 3M petrifilm to determine priority sources of fecal coliform. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of E. coli and help prioritize use of	Section 106 Grant for TMDL Implementation	NE	2008	5	3

		funding and resources.					
Georgia Planning Act, Part 5 - River Corridor Protection Ordinance	Madison County	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans. Requires 100 ft. Vegetated buffer on the Broad River and Hudson River. <u>South Fork Broad River should be added in May 2007.</u> Single-family residential housing allowed in buffer if on 2 acre lot and septic drainfield is not installed in buffer. Doesn't apply to existing land use.		NE	May 2007	1	3 (for new development)
Soil Erosion and Sedimentation Control Ordinance	Madison County	Currently requires 25ft. buffer on state waters for new and redevelopment. Single-family residential housing allowed in buffer if on 2 acre lot and septic drainfield is not installed in buffer. <u>This will be changed to 50ft. in May 2007.</u>		NE	May 2007	5	1 (for new and redevelopment)

VII. MONITORING PLAN

Water quality monitoring serves several purposes, including obtaining data to determine sources of pollution, supporting management decisions, describing baseline conditions, and evaluating the effects of management measures on water quality. This section describes parameters to be monitored, status, whether monitoring is required for watershed assessments or storm water permits, and the intended purpose. Submittal of a Sampling and Quality Assurance Plan (SQAP) for EPD approval is mandatory if monitoring data is to be used in support of listing decisions.

Water quality data used to evaluate the criteria violated are less than five years old? Yes [] No [X].

Table 7. MONITORING PLAN

PARAMETER (S) TO BE MONITORED	RESPONSIBLE ENTITY	STATUS (CURRENT, PROPOSED, OR RECOMMENDED)	TIME FRAME		PURPOSE (If for listing assessment, date of SQAP submission)
			START	END	
E. Coli	Broad River Watershed Association, Adopt-A-Stream, EPD	Recommended	2008	Ongoing	Determine priority sources through targeted sampling with Petrifilm (or IDEXX)

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan. (At a minimum, this is to include all education/outreach activities defined in the contractual Scope of Work for TMDL Implementation Plan development or revisions.)

Table 8. PLANNED OUTREACH FOR IMPLEMENTATION

RESPONSIBILITY	DESCRIPTION	AUDIENCE	DATE
NEGRDC	Distribute TMDL Implementation plans to counties, cities and others participating in the implementation process.	Stakeholders	June 2007
Broad River Watershed Association, Adopt-A-Stream, EPD	Distribution of water quality education materials to volunteers helping with targeted sampling	Volunteer citizens	2008
NEGRDC	Presentation of potential implementation activities. Oconee River RC&D may apply for 319 grant funding in the future to implement suggested management practices mentioned in the meeting.	Oconee River RC&D	June 2007

IX. MILESTONES AND MEASURES OF PROGRESS FOR BEST MANAGEMENT PRACTICES (BMPs) AND OUTREACH

Table 9 tracks and reports progress of significant management measures identified in Tables 6A, 6B, and other sections of this plan, including outreach, additional monitoring and assessments, and enhancement or installation of BMPs. Significant activities and the target dates of accomplishment are listed, and comments are provided on the effectiveness of the management measure, the degree of community support, what was learned, how the measure might be improved in the future, and other pertinent observations.

Table 9. MILESTONES AND MEASURES OF PROGRESS

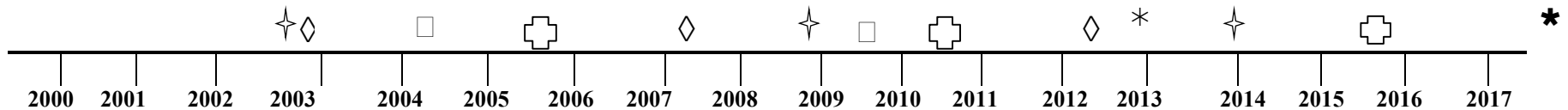
BEST MANAGEMENT PRACTICE	RESPONSIBLE ORGANIZATION	STATUS		COMMENT
		PROPOSED	INSTALLED	
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.		On-going	Varies with BMP applied.
Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.20 & .21	Georgia Department of Agriculture / Georgia Environmental Protection		On-going	Assume no discharge and >75% removal.

Plan for Broad River (SR 281 to Scull Shoal Creek near Danielsville)
HUC 10 # 0306010403

	Division for enforcement action.			
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division	Georgia Department of Agriculture		On-going	Effectiveness will vary with the specific application.
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services		On-going	Varies with BMP applied. EQIP programs should be targeted to farms that are located near TMDL segments.
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency		On-going	Effectiveness will vary with the specific application.
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	Natural Resources Conservation Services	2007		Effectiveness varies with specific application. Only available to farms that have Best Management Practices in place. Reward for environmental stewardship.
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Georgia DHR, County Board of Health		On-going	Requires permitting of septic systems prior to installation and inspection after installation. Applies to all new septic systems. It has an effectiveness rating of 25-50%. Maintenance of systems is not enforced.
Soil Erosion and Sedimentation Control	Madison County	May 2007 (enhanced)	2001	Offers increased filtration and infiltration of runoff.
Post-Development Stormwater Management Ordinance	Madison County		2006	Decreases runoff from post-development. Effective if enforced. Efficiency is greater than 75% when enforced.
Set aside funds for purchase of greenspace	Madison County		On-going	Preservation of greenspace in environmentally sensitive areas may reduce runoff of pollutants.
Conservation Subdivision Ordinance	Madison County		2001	Minimization of impervious surface and preservation of greenspace may reduce runoff of pollutants.
Groundwater Recharge Ordinance	Madison County		2006	Extent of groundwater recharge areas is low. Ordinance offers extra protection from pollutants. Does not prevent runoff.
River Corridor Protection Ordinance	Madison County	May 2007 (enhanced)	On-going	Requires 100 ft. riparian buffers for Broad River. South Fork Broad River should be added in May. Expected to have high removal efficiency for new and redevelopment.
Development Standards Program	Madison County		2005	Creates point system for development practices. Some points can be obtained through preservation of greenspace and trees.
Illegal Dumping Programs	Madison County		In place, on-going	Code Enforcement Officer enforces illegal dumping ordinance.
Volunteer E. Coli Monitoring Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Targeted sampling to determine sources with a water quality education initiative
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Results from event presented to stakeholders and government officials and used to guide use of funding and resources.
Distribution of TMDL Implementation Plans	NEGRDC		June 2007	Hard copies to be distributed to requesting stakeholders. Plans to be posted on webpage.
Water Quality newspaper articles	County Extension		On-going	Periodically runs water quality articles related to agricultural BMPs, septic maintenance, etc.
Rivers Alive Cleanup	Keep Madison Beautiful		On-going	Annual water quality education and river clean-up event
Meeting with Oconee River RC&D Council	NEGRDC	June 2007		Presentation of potential future 319(h) projects to address sources of fecal coliform in the TMDL watersheds.

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of this TMDL Implementation Plan by Georgia EPD.



- Projected EPD Basin Group Monitoring
- New TMDLs Completed
- Revised or Updated TMDL Implementation Plan Received by EPD
- Evaluation of Implementation Plan/water Quality Improvement
- Project Attainment for Plans Prepared in 2002
- Project Attainment for Plans Prepared in 2007

Prepared By:	Christina Baker		
Agency:	Northeast Georgia Regional Development Center		
Address:	305 Research Drive		
City:	Athens	ST:	GA ZIP: 30606
E-mail:	cbaker@negplanning.org		
Date Submitted to EPD:	6/15/2007	Revision: 01	

Preparation of this report was financed in part through a grant from the U.S. Environmental Protection Agency under the provisions of Section 106 of the Federal Water Pollution Control Act, as amended.

APPENDIX A.

STAKEHOLDERS

List the names, addresses, telephone numbers, and e-mail addresses for local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations, including environmental groups and individuals, With a major interest in this watershed.

NAME/ORGANIZATION	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doug Appler, Madison County Planning	P.O. Box 68	Danielsville	GA	30633	706-795-6340	dappler@madisonco.us
Jack Huff, Madison County Code Enforcer	P.O. Box 510	Danielsville	GA	30633	706-795-5685	mcce@madisonco.us
Carl Varnadoe, Madison County Extension Director	P.O. Box 510	Danielsville	GA	30633	706-795-2281	Uge1191@uga.edu
Ruth Ann Tesanovich, Property Owners for Commonsense Growth	959 Hwy. 172	Colbert	GA	30628	706-788-3238	rtesanovich@uha.uga.edu
Burton 'Chip' Chandler, Watson Mill Bridge State Park	740 First St.	Carlton	GA	30627	706-797-3501	dewchndlr@aol.com
Marvin White, Madison County Chamber of Commerce	P.O. Box 361	Danielsville	GA	30633-5961	706-795-3473	marvin@madisoncountyga.org
Steve Sorrells, City of Comer Clerk	P.O. Box 65	Comer	GA	30629-0065	706-783-4552	shsorrells@alltel.net
Sam Linhart, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-783-2308	jeansmithga@earthlink.net
Victor Johnson, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-795-2184	glfvyj@charterinternet.com
Dudley Hartel, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-559-4236	drhartek@alltel.net
Michelle Dills, City of Danielsville Clerk	P.O. Box 339	Danielsville	GA	30633-0339	706-795-2200	cityofdville@charter.net
Susan Seagraves, Madison County Health Department	P.O. Box 26	Danielsville	GA	30633-0026	706-795-2131	
Doug Patton, Madison County Cattleman's Association	P.O. Box 1075	Danielsville	GA	30633	706-248-5851	

APPENDIX B.

UPDATES TO THIS PLAN

If this is a major or minor revision of an existing plan, this section will describe the date, section or table updated, and a summary of what was changed and why.

APPENDIX C.

FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.

Visual Field Survey for Broad River (SR 281 to Scull Shoal Creek near Danielsville), January 2007

Visual Field Survey
For
Broad River
(SR 281 to Scull Shoal Creek near Danielsville)
In the
Savannah River Basin
January 2007

Prepared by the Northeast Georgia Regional Development Center with the support of
the Environmental Protection Division of the Georgia Department of Natural Resources

Table of Contents

1.0	INTRODUCTION.....	3
1.1	Location.....	3
1.2	Watershed description.....	3
2.0	METHODOLOGY.....	7
3.0	FIELD FINDINGS.....	7
3.1	General Characteristics.....	7
3.2	Point Sources.....	9
3.3	Non-Point Sources.....	9
4.0	RANKS ASSIGNED TO POLLUTION SOURCES.....	11
5.0	SUMMARY OF FINDINGS.....	11
6.0	STAKEHOLDER INVOLVEMENT.....	11

List of Tables

Table 1.	Watershed Land Cover.....	3
Table 2.	LBCS Categories and Function Codes.....	4

List of Figures

Figure 1.	Broad River (Madison) Land Use Map	5
Figure 2.	Broad River (Madison) Survey Map	6
Figure 3.	Masons Mill Creek at Old Wildcat Bridge Rd.....	8
Figure 4.	Broad River at GA Hwy 281.....	9
Figure 5.	Farm in Broad River watershed without animal exclusion fencing.....	10

1.0 INTRODUCTION

1.1 Location

The Broad River (SR 281 to Scull Shoal Creek near Danielsville) TMDL Segment is listed as not supporting its designated use of fishing due to excess fecal coliform bacteria. The data that put the segment on the 303(d) list were collected in 2002. The five-mile segment is located in eastern Madison County. The watershed is located in Madison County with a very small portion in Franklin County.

1.2 Watershed Description

The Broad River TMDL segment watershed is comprised of 28,021.59 acres of land in Madison County. It is located within the HUC 10-0306010403, and is comprised of HUC 12-030601040301 and HUC 12-030601040302. Land use was determined by classifying 2004 NEGRDC parcels data using the Land-Based Classification System of the American Planning Association. The primary land uses in the watershed are forestry/logging, crop production and residential. **Table 1** shows the area and percent of each land use type. **Table 2** lists the LBCS categories and function codes that relate to each land use category used for this survey. The land use map for the Broad River watershed is included as **Figure 1**. **Figure 2** shows the stream crossings that were surveyed and includes data obtained from EPD.

Table 1: Broad River Watershed Land Use

Land Use	Area (Acres)	% of total
Residential	5171.43	18%
Commercial	33.45	0%
Industrial	32.22	0%
Transportation/Communication/Utility	9.40	0%
Park/Recreation/Conservation	208.45	1%
Public/Institutional	109.05	0%
Crop Production	7979.56	28%
Animal Production	1857.00	7%
Forestry/Logging	12621.03	45%
Total	28021.59	100%

Table 2: LBCS Categories and Function Codes

Land Use Categories	LBCS Category	LBCS Function Codes
Residential	Private Household	1100
	Hotel, motel, other accommodation	1300
Commercial	General Sales and services	2000's
	Construction related business	7000's
Industrial	Manufacturing and Wholesale Trade	3000's
Transportation/Communication/Utility	Transportation, communication, information, and utility	4000's
Park/Recreation/Conservation	Arts, entertainment, and recreation	5000's
	Natural parks	5500
Public/Institutional	Education, public Admin, health care, oth. Institutional	6100
Mining/Extraction	Nonmetallic mining	8400
	Quarrying/stonecutting	8500
Crop Production	Crop Production	9100
	Support Functions for agriculture	9200
Animal Production	Animal production and slaughter, grazing land	9300
Forestry/Logging	Forestry and logging	9400
Game Preserve	Fishing, hunting and trapping, game preserves	9500
Other	Unclassifiable	9900

Figure 1.

Broad River (Madison) Land Use Map

Broad River (Madison) Watershed Land Use

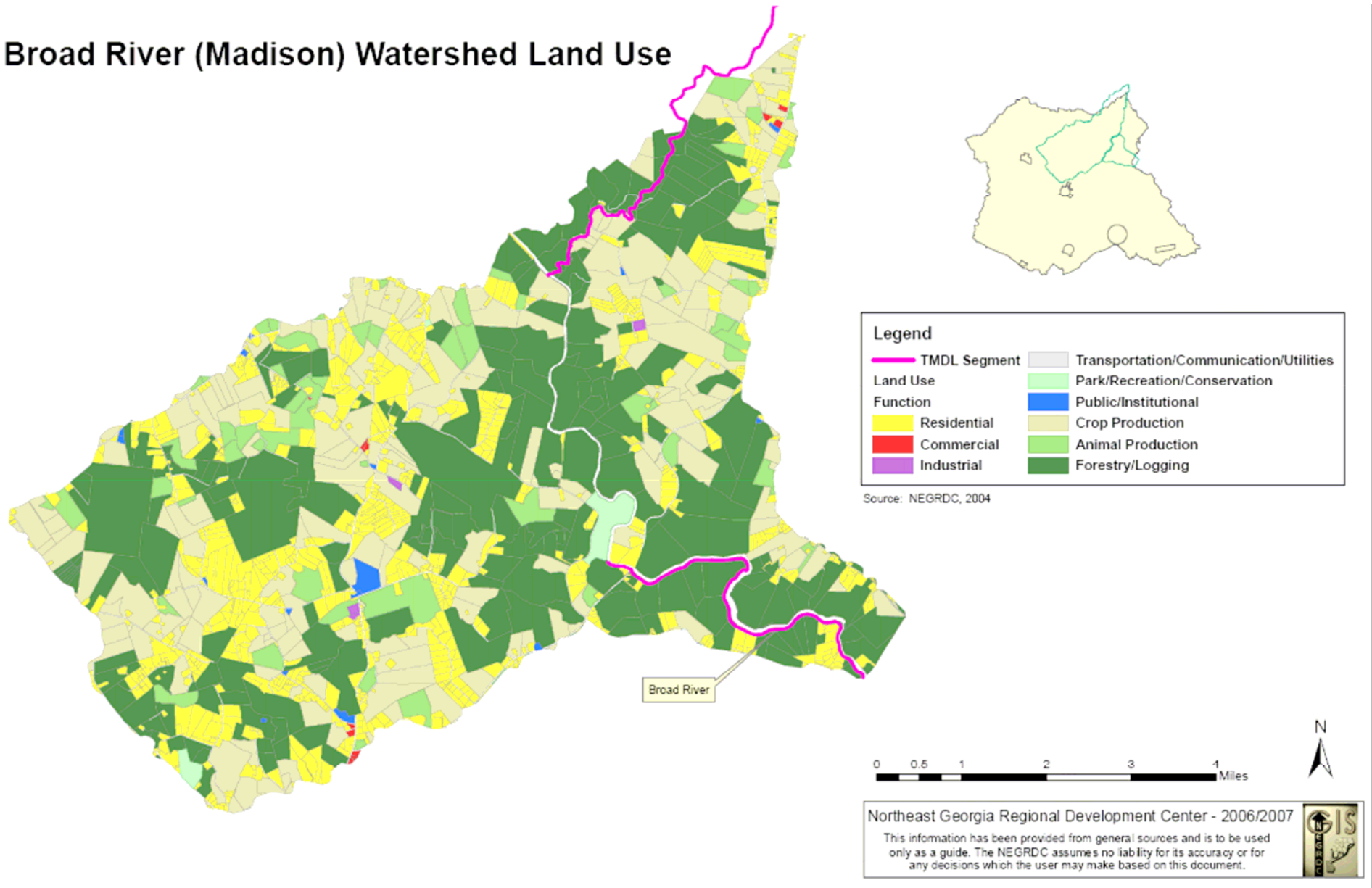
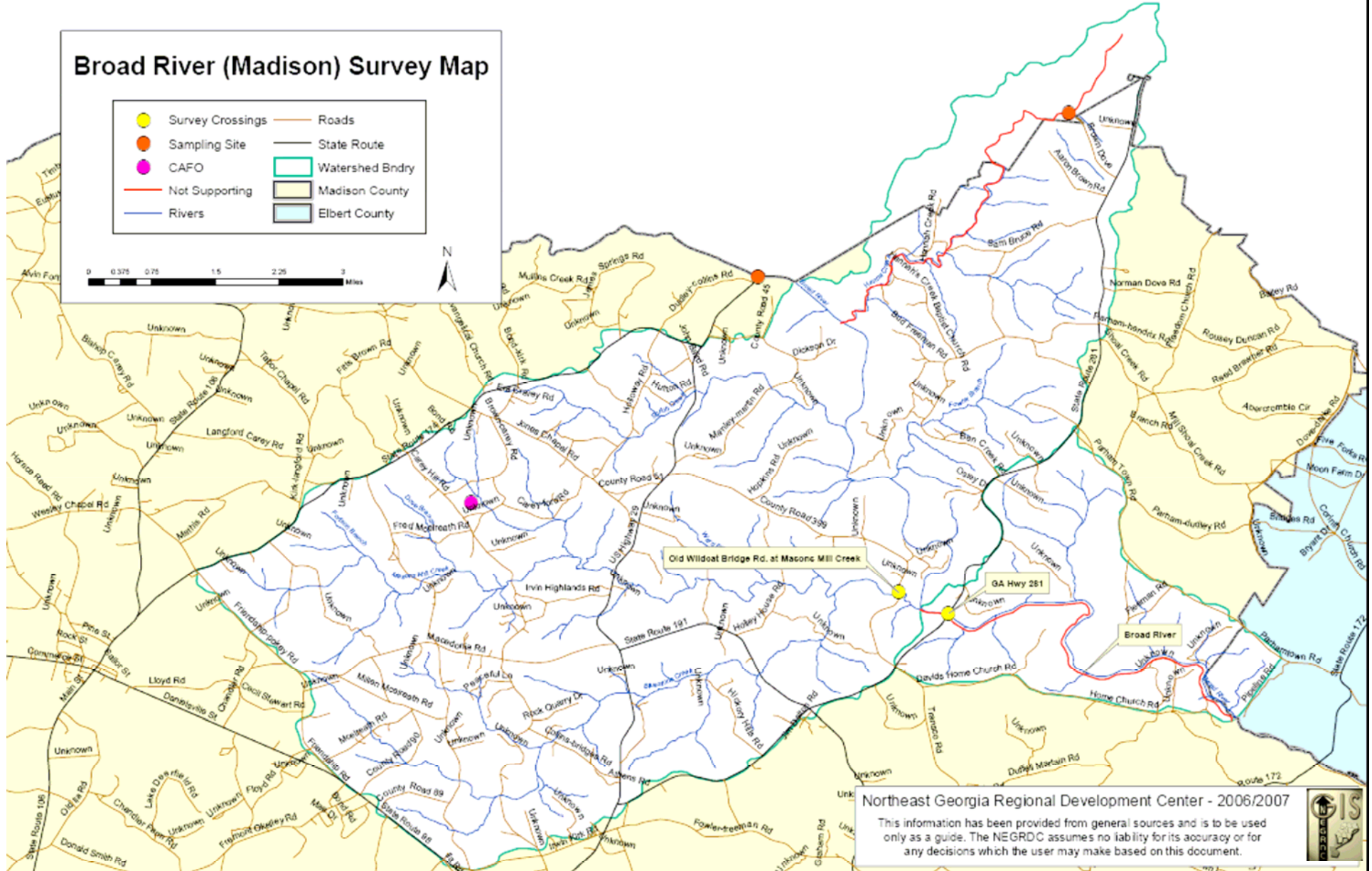


Figure 2.

Broad River (Madison) Survey Map



2.0 METHODOLOGY

Prior to conducting the field survey, point data from the Georgia Environmental Protection Division were compiled and analyzed to determine the location of any point sources of pollution in the watershed. This data included the location of NPDES permitted facilities, landfills, LAS and CAFOs. In addition, 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of fecal coliform pollution within the watershed boundary that is shown on the maps on the previous pages. 2004 RDC land use data was also consulted to determine the extent of potential sources of fecal coliform. One purpose of the field surveys is to compare the most recent RDC land use data with the 1995 land use data that was used in the development of the TMDLs. However, in the case of the Broad River (Madison) segment, only the area of the watershed that was within the NEGRDC region was surveyed, so comparison was not possible.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. One road crossings was visited on the TMDL segment, and one road crossing was visited on a tributary to the TMDL segment. The windshield survey was conducted throughout the watershed boundary shown on the maps. Sources investigated during the windshield survey were primarily animal production facilities, because these are easy to identify from aerials and it can be readily apparent if they are not using Best Management Practices. These facilities were considered to be priority sources if animals had access to the stream or there were not best management practices in place to prevent runoff of fecal matter into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

3.0 FIELD FINDINGS

3.1 General Characteristics

The field findings discussed here are the result of the visual surveys of the TMDL stream segment and its watershed.

The stream crossings that were visited for this survey were at Old Wildcat Bridge Rd. and Masons Mill Creek and at GA Hwy 281 and the Broad River. At all crossings the water appeared cloudy and reddish-brown from sediment. At the Old Wildcat Bridge Rd. crossing we observed heavy bank erosion, mid-channel bars and sediment deposition on the banks. There was also bank erosion at GA Hwy281. Along the entire TMDL segment the riparian buffer is greater than 100 ft. and along most of the segment it is

greater than 500 ft. There were no unusual odors or water surface abnormalities. General photos of the stream are included as **Figures 3** and **4**.



Figure 3. Masons Mill Creek at Old Wildcat Bridge Rd. Looking Upstream



Figure 4. Broad River at GA Hwy 281 Looking Downstream

Land use observed during the watershed drive included horse, cattle and poultry farms, forestry/logging and residential development.

3.2 Point Sources

There are no point sources of fecal coliform in the Broad River (SR 281 to Scull Shoal Creek) watershed.

3.3 Non-Point Sources

Potential sources of non-point pollution in the Broad River watershed include animal production, wildlife and septic malfunction.

45% of the Broad River watershed is classified as forestry/logging. The primary source of fecal coliform in forested areas is most likely wildlife; however, it is likely that there are human sources as well.

Crop production accounts for 28% of the land use in the watershed. Crop production can contribute to fecal coliform pollution if manure is used to fertilize fields. If fresh litter is spread before a rain event, this can cause runoff with high fecal coliform concentrations. Best Management Practices such as stack houses can be used at the poultry operations to kill bacteria

before the litter is spread, and other Best Management Practices can be utilized on the cropland to prevent runoff of fecal coliform into the stream. No observations were made to determine whether or not BMPs for poultry litter application were being used.

According to the land use data, only a small percentage of the land in the Broad River watershed is used for animal production. However, during the windshield survey animal production was observed to be quite common. It is possible that some of the land classified in the land use data as crop production is in fact used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. There are several farms in close proximity to the TMDL segment. One farm that was visited during the watershed survey did not have animal exclusion fencing (shown in Figure 5). There is one permitted CAFO in the watershed (shown on the survey map)



Figure 5. Farm in Broad River watershed without animal exclusion fencing

Residential development accounts for 18% of the land use in the watershed. All of the residences in the watershed are served by individual septic systems. It is likely that there are failing septic systems in the watershed, because there is no ordinance requiring maintenance. There is a requirement for permitting of septic systems upon installment. The permit requires a soil permeability analysis prior to installation to

determine if it is suitable for septic; however, based on USDA soils data and the RDC's land use data there are about 500 parcels of land that are used for residential purposes that are either fully or partially located on soils that are not suitable for septic systems (without major modifications). The metadata for the USDA soils data used in the analysis states the following:

"Field investigations and data collection are carried out in sufficient detail to name map units and to identify accurately and consistently areas of about 4 acres."

4.0 RANKS ASSIGNED TO POLLUTANT SOURCES

Wildlife in forested areas is likely to be the primary source of fecal coliform in the Broad River watershed due to the degree of forested area in the watershed. However, for the purposes of the implementation plans, animal production (including poultry, egg, livestock and horse operations), crop production and failing septic systems will be considered priority sources.

5.0 SUMMARY OF FINDINGS

The primary land uses in the Broad River (Madison) watershed are forestry/logging, crop production and residential. There are no point sources in the watershed. Possible non-point sources include failing septic systems, animal production, crop production and wildlife, although, not all sources were visibly evident.

6.0 STAKEHOLDER INVOLVEMENT

The field surveys were presented to stakeholders at the second advisory group meeting and posted on the Northeast Georgia RDC website to facilitate stakeholder input on the survey reports.